

## Popular Energy Drinks Cause Tooth Erosion, Study Shows

Academy of General Dentistry. "Popular Energy Drinks Cause Tooth Erosion, Study Shows." *ScienceDaily*, 16 Mar. 2008. Web. 8 Oct. 2013.

*Mar. 16, 2008* — For more than 10 years, energy drinks in the United States have been on the rise, promising consumers more "oomph" in their day. In fact, it is estimated that the energy drink market will hit \$10 billion by 2010. While that may be great news for energy drink companies, it could mean a different story for the oral health of consumers who sometimes daily rely on these drinks for that extra boost.

Previous scientific research findings have helped to warn consumers that the pH (potential of hydrogen) levels in beverages such as soda could lead to tooth erosion, the breakdown of tooth structure caused by the effect of acid on the teeth that leads to decay. The studies revealed that, whether diet or regular, ice tea or root beer, the acidity level in popular beverages that consumers drink every day contributes to the erosion of enamel.

However, in a recent study that appears in the November/December 2007 issue of *General Dentistry*, the Academy of General Dentistry's (AGD) clinical, peer reviewed journal, the pH level of soft drinks isn't the only factor that causes dental erosion. A beverage's "buffering capacity," or the ability to neutralize acid, plays a significant role in the cause of dental erosion. The study examined the acidity levels of five popular beverages on the market. The results proved that popular "high energy" and sports drinks had the highest mean buffering capacity, resulting in the strongest potential for erosion of enamel.

According to the study, the popularity of energy drinks is on the rise, especially among adolescents and young adults. Their permanent teeth are more susceptible to attack from the acids found in soft drinks, due to the porous quality of their immature tooth enamel. As a result, there is high potential for erosion among this age demographic to increase.

In fact, Raymond Martin, DDS, MAGD, AGD spokesperson, says he treats more patients in their teens to 20s for tooth erosion. "They drink a great deal more sodas, sports drinks, and energy drinks," he says. "The results, if not treated early and if extensive, can lead to very severe dental issues that would require full mouth rehabilitation to correct," says Dr. Martin. Drink responsibly for your oral health:

- Use a straw positioned at the back of the mouth so that the liquid avoids the teeth
- Rinse the mouth with water after drinking acidic beverages
- Limit the intake of sodas, sports drinks and energy drinks

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## **The potential effects of pH and buffering capacity on dental erosion.**

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### **Abstract**

Soft drink pH (initial pH) has been shown to be a causative factor--but not necessarily the primary initiating factor--of dental erosion. The titratable acidity or buffering capacity has been acknowledged as playing a significant role in the etiology of these lesions. This in vitro study sought to evaluate five different soft drinks (Coca-Cola Classic, Diet Coke, Gatorade sports drink, Red Bull high-energy drink, Starbucks Frappuccino coffee drink) and tap water (control) in terms of initial pH and buffering capacity. Initial pH was measured in triplicate for the six beverages. The buffering capacity of each beverage was assessed by measuring the weight (in grams) of 0.10 M sodium hydroxide necessary for titration to pH levels of 5.0, 6.0, 7.0, and 8.3. Coca-Cola Classic produced the lowest mean pH, while Starbucks Frappuccino produced the highest pH of any of the drinks except for tap water. Based on statistical analysis using ANOVA and Fisher's post hoc tests at a  $P < 0.05$  level of significance, Red Bull had the highest mean buffering capacity (indicating the strongest potential for erosion of enamel), followed by Gatorade, Coca-Cola Classic, Diet Coke, and Starbucks Frappuccino.